ELECTRONIC APPARATUS AND HINGE

FIELD

The present disclosure relates to an electronic apparatus and a hinge. More particularly, the present disclosure relates to an electronic apparatus and a hinge or a movable part of the apparatus which allows the apparatus to appear more elegant from the cosmetic point of view while providing the apparatus with improved durability.

BACKGROUND

In the related art, a hidden hinge is used in a part of an apparatus which is opened and closed, e.g., a door or lid of the apparatus. For example, a door hinge of an apparatus is mounted such that it is not visible on the exterior of the apparatus when the door is closed (or opened).

Specifically, a hidden hinge has a pair of arms attached to, for example, a door and a door frame, and the two arms are connected by a rotating pin which constitutes a rotational axis of the door. The arms are contained in respective recesses on end faces of the door and the door frame when the door is closed (or opened) and the end faces consequently adjoin each other.

The use of such hidden hinges allows furniture and the like to be designed more elegantly.

Techniques associated with hidden hinges having an automatic closing function have been also proposed (for example, see JP-A-2007-046269 (Patent Document 1)).

SUMMARY

Recently, more and more electronic apparatus are provided with highly elegant appearance. Many such electronic apparatus are configured such that they can be carried in a lapped state for improved portability.

In order to provide an electronic apparatus with highly elegant appearance, it is essential to design the apparatus for a lighter weight, a smaller size, and a smaller thickness. For example, there are demands for further reductions in the thickness of apparatus such as notebook type personal computers and mobile phones.

However, a hidden hinge according to the related art such as that disclosed in Patent Document 1 employs a slide mechanism. In the case of a hidden hinge having a slide mechanism, it is difficult to keep the slide mechanism itself small because the strength of a mounting plate for the hinge must be kept at a certain level in a region thereof having a hole in which an end of the hinge is slid. For this reason, it has been difficult to keep the thickness of an apparatus having such a mechanism small.

Since the slide mechanism is designed such that the hinge is slid with the end thereof engaged with the hole of the mounting plate, there is concern about wear of the mechanism attributable to friction, and the mechanism must therefore be designed for sufficient durability. In order to achieve sufficient durability, materials usable for the mechanism are limited, which has hindered efforts toward lighter apparatus, for example.

Under the circumstance, it is desirable to provide an apparatus having a movable part with more elegant appearance while keeping the durability of the apparatus sufficiently high.

An embodiment of the present disclosure is directed to an electronic apparatus including a first housing and a second housing rotating about a rotational axis and a hinge. The hinge includes a first link rotatably attached to the first housing at one end thereof, a second link attached to the second housing with a pin at one end thereof, a first arm rotatably attached to the second housing at one end thereof and rotatably attached to the first link at another end thereof, and a second arm rotatably attached to the first housing at one end thereof and rotatably attached to the second link at another end thereof.

The first housing or the second housing may be rotated by the hinge depending on the usage of the electronic apparatus and the hinge may be inserted into the first housing or the second housing when the first housing or the second housing is rotated.

The first link and the second link of the hinge may be different from each other in terms of straight length.

The first arm and the second arm of the hinge may have a curved shape, and the first link and the second link of the hinge may have a straight shape.

The first housing may be a housing including a display, and the second housing may be a housing including a keyboard. Thus, the electronic apparatus including the first housing and the second housing may serve as a notebook type personal computer.

According to the embodiment of the present disclosure, the first link is rotatably attached to the first housing at one end thereof; the second link is attached to the second housing with a pin at one end thereof; the first arm is rotatably attached to the second housing at one end thereof and rotatably attached to the first link at another end thereof; and the second arm is rotatably attached to the first housing at one end thereof and rotatably attached to the second link at another end thereof.

Another embodiment of the present disclosure is directed to a hinge including a first link rotatably attached to a first housing at one end thereof, a second link attached to a second housing with a pin at one end thereof, a first arm rotatably attached to the second housing at one end thereof and rotatably attached to the first link at another end thereof, and a second arm rotatably attached to the first housing at one end thereof and rotatably attached to the second link at another end thereof.

According to the embodiment of the present disclosure, the first link is rotatably attached to the first housing at one end thereof; the second link is attached to the second housing with a pin at one end thereof; the first arm is rotatably attached to the second housing at one end thereof and rotatably attached to the first link at another end thereof; and the second arm is rotatably attached to the first housing at one end thereof and rotatably attached to the second link at another end thereof.

According to the embodiments of the present disclosure, an apparatus having a movable part can be provided with elegant appearance and improved durability.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is an illustration of an exemplary hidden hinge according to the related art;

FIG. **2** is an illustration of a notebook type personal computer having the hidden hinge shown in FIG. **1** mounted therein showing the state of the hidden hinge observed when the computer is opened;

FIG. **3** is an illustration of an exemplary hidden hinge according to an embodiment of the present disclosure;

FIG. **4** is an illustration of a notebook type personal computer having the hidden hinge shown in FIG. **3** mounted therein showing the state of the hidden hinge observed when the computer is opened;